

### **Amendments to the Claims:**

This listing of Claims will replace all prior versions, and listings, of Claims in the application.

### **Listing of Claims**

1. (currently amended) A method for converting from a source color space to a target color space, ~~said source color space resulting from~~ defined by a combination of N primary color points ~~and said target color space resulting from combination of a N+1 or more primary color points in said target color space~~, wherein N is an integer, the method comprising:

for the target color space, defining a set of at least N+1 primaries in which color points will be rendered as a combination of said primaries; said at least N+1 primaries forming the boundary of the target color space;

defining ~~[[a]]~~ an interior color point positioned in the interior of the boundary of said target color space;

dividing said target color space into a set of regions that are bounded by at least ~~three primaries, said one of at least three primaries comprising~~ two of the at least N+1 primaries and by said interior color point;

calculating solution matrices for each said region; and

for any given color point in said source color space, ~~calculating which said region the color point lies in and using the calculated region to select~~ selecting one of said solution matrices for rendering said source color point with said target primaries.

2. (original) The method of Claim 1 wherein N is 3.

3. (original) The method of Claim 1 wherein said interior color point is the white point of the target color space.

4. (original) The method of Claim 1 wherein said interior color point is an off-white color point of the target color space.

5. (original) The method of Claim 1 wherein said regions are substantially triangles.
6. (currently amended) The method of Claim 1 wherein the step of calculating solution matrices further comprises calculating a matrix that converts between an intermediate color space and the ~~destination~~ target color space for each said region bounded by said at least three primaries.
7. (original) The method of Claim 6 wherein the intermediate color space is CIE XYZ space.
8. (original) The method of Claim 6 wherein the intermediate color space is the source color space.
9. (currently amended) The method of Claim 1 ~~further comprising~~ wherein the step of selecting one of said solution matrices for rendering said source color point with said target primaries comprises determining in which region said source color point resides.
10. (currently amended) The method of Claim 9 wherein the step of determining which region said source color point resides further comprises:
  - determining the hue angle of said source color point; and
  - ~~determining from using said hue angle to select which the region in which said~~ source color point resides.
11. (currently amended) An image processing system for converting from a source color space to a target color space, said source color space resulting from a combination of N primary color points ~~and said target color space resulting from combination of a N+1 or more primary color points in said target color space~~, wherein N is an integer, said image processing system comprising:
  - a display for displaying image data in at least one of the source color space and target color space; and

processing circuitry configured to define a set of at least  $N+1$  primaries in which color points will be rendered as a combination of said primaries for the target color space, said at least  $N+1$  primaries forming the boundary of said target color space, to define ~~[[a]]~~ an interior color point positioned in the interior of the boundary of said target color space, to divide said target color space into a set of regions that are bounded by at least three primaries, ~~said one of at least three primaries comprising two of said  $N+1$  primaries and by~~ said interior color point, to calculate solution matrices for each said region, ~~to calculate which said region each source color point lies in and using the calculated region and~~ to select one of said solution matrices for rendering ~~said a~~ source color point with said target primaries for any given color point in said source color space.

12. (original) The image processing system of Claim 11 wherein  $N$  is 3.

13. (original) The image processing system of Claim 11 wherein said interior color point is the white point of the target color space.

14. (original) The image processing system of Claim 11 wherein said interior color point is an off-white color point of the target color space.

15. (currently amended) The image processing system ~~method~~ of Claim 11 wherein said regions are substantially triangles.

16. (currently amended) The image processing system ~~[[o]]~~ of Claim 11 wherein the processing circuitry is further configured to choose a matrix to convert between an intermediate color space and said region bounded by said at least three two primaries and said interior color point.

17. (original) The image processing system of Claim 16 wherein the intermediate color space is CIE XYZ space.

18. (original) The image processing system of Claim 16 wherein the intermediate color space is the source color space.

19. (currently amended) The image processing system of Claim 11 wherein the processing circuitry is further configured to determine in which region said source color point resides.

20. (currently amended) The image processing system of Claim 19 wherein the processing circuitry is further configured to determine the hue angle of said source color point and to determine from said hue angle in which region said source color point resides.

21. (currently amended) A system for converting from a source color space to a target color space, wherein said source color space comprises N primary color points and said target color space comprises at least N+1 primary color points, said system comprising:

input means for accepting source image data color points;

a hue angle calculator configured for calculating ~~to calculate~~ hue angles for the source image data color points;

a gamut converter configured for optionally fitting the gamut of the source color space to the gamut of said target color space using the calculated hue angles; and

a multi-primary converter configured for converting said source image data values color points from the N-primary source color space into image data values for the at least N+1 primary target color space using one of a plurality of conversion matrices; wherein the multi-primary converter is further configured to select said conversion matrix using the calculated hue angles.

Claims 22 – 29: (canceled).

30. (new) The system of claim 21 wherein the multi-primary converter comprises a multiplier configured for multiplying a source image data color point by said conversion matrix to produce an image data value in the at least N+1 primary target color space.

31. (new) The system of claim 21 wherein each conversion matrix converts a source image data color point from said source color space comprising N primary color points to an image data value positioned in a region in the at least N+1 primary target color space, said region being bounded by at least two of the at least N+1 primary color points of said target color space; said region being identified by one of said calculated hue angles.

32. (new) An image processing system for converting an input N-valued color image data value in a source color space to an N+1-valued color image data value in a target color space, said source color space being defined by N primary color points and said target color space being defined by at least N+1 primary color points in said target color space, wherein N is an integer, said image processing system comprising:

a display for displaying image data in said target color space defined by said at least N+1 primary color points; and

processing circuitry configured for accepting said input N-valued color image data value, and configured for producing said N+1-valued color image data value in said target color space for rendering on said display; said processing circuitry being further configured for calculating a hue angle for said input N-valued color image data value; said processing circuitry being further configured for selecting conversion data using said hue angle; said processing circuitry being further configured for using said selected conversion data to produce said N+1-valued color image data value in said target color space.

33. (new) The image processing system of claim 32 wherein said conversion data is arranged in a plurality of solution matrices; and wherein the processing circuitry is further configured for using said hue angle to select a solution matrix from among said plurality of solution matrices.